LEPIN, L. K.   B-9

Category: USSR

Abs Jour: Zh--Kh, No 3, 1957, 7563

Author: Lepin, L. K., Nurgalieva, M. N., and Strakhova, G. V.
Inst   :   Not given
Title   :   Surface Reactions. V. Adsorption of Silver Ions on Ashless
            Charcoal and on Charcoal Which has been Covered by a Film of
            Metallic Silver

Orig Pub: Zh. Fiz. Khimii, 1956, Vol 30, No 2, 286-294

Abstract: The adsorption of AgF on ashless macroporous charcoal has been
            investigated. A large fraction of the AgF is adsorbed irrever-
            sibly. The rate of reduction of AgF to Ag varies in different sec-
            tions of the charcoal surface and depends, in the opinion of the
            authors, on the degree of oxidation of the charcoal surface. Ag
            can be removed from the charcoal surface by treatment with con-
            centrated HNO_3 or HF. In the opinion of the authors the reversibly

                                    -21-

Card   :   1/2

                                                          B-9

Category: USSR

Abs Jour: Zh---Kh, No 3, 1957, 7563

adsorbed AgF fraction represents AgF which has been molecularly
adsorbed on the Ag surface. The equilibrium adsorption of AgF on
charcoal which has been coated with a film of Ag follows the equa-
tion for the Langmuir isotherm for monomolecular layers. For pre-
vious communications see Z. physik. Chem., 1936, A176, 303;
Acta phys.-chim. USSR, 1939, Vol 10, 175; 1946, Vol 21, 1089; and
Zh. fiz. khimii, 1950, Vol 24, 224.

                                    -22-

Card   :   2/2

LEPIN', L.; TETERE, A.

Interaction of highly dispersed zinc with aqueous solutions of
hydrochloric acid. Dokl. AN SSSR 111 no.3:601-604 N '56.
(MLRA 10:2)

1. Akademik Akademii nauk LatvSSR..(for Lepin') 2. Institut
khimii Akademii nauk LatvSSR.
     (Zinc) (Hydrochloric acid) (Chemical reaction, Rate of)

137-58-5-10183

LEPIN, L. K.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 185 (USSR)

AUTHORS: Kadek, V. M., Lepin', L. K.

TITLE: The Electrode Potentials and the Rate of Copper Oxidation in Aqueous Solutions of Chlorides of the Alkali and Alkali Earth Metals (Elektrodnyye potentsialy i skorost' okisleniya medi v vodnykh rastvorakh khloridov shchelochnykh i shchelochno-zemel'nykh metallov)

PERIODICAL: Latv. PSR zinātnu Akad. vēstis, Izv. AN LatvSSR, 1957, Nr 5, pp 107-118 (Summary in Lettish)

ABSTRACT: The electrode potentials E and rate of corrosion (RC) in solutions of Li, Na, K, Mg, and Ca chlorides of from 0.001 N to saturation are investigated. During the initial period of oxidation, the RC is considerable and there is a sharp shift of E toward the negative in all the solutions. Depending upon the nature of the products formed, the further course of the corrosion process develops variously. In saturated KCl and NaCl and normal $CrCl_2$ solutions, RC rises because of the formation of soluble Cu poly-chloride complexes. In centinormal and more dilute solutions the formation of insoluble CuCl precipitates or basic chlorides

Card 1/2

The Electrode Potentials (con.)

137-58-5-10183

results in a decline in RC due to inhibition of the anode process, while there is a simultaneous increase in the positive value of E. In decinormal and normal solutions of all the chlorides RC and E acquire fixed values, because the abovementioned opposing factors act with equal intensity under these conditions. In saturated $CaCl_2$ and $MgCl_2$ solutions, corrosion is inhibited by the formation of metallic hydroxides of low solubility on cathode segments. It is established that at ≥ 0.1 N strengths of all the chlorides in the solutions, the Cu potential is not equal to the potential of a $Cu/CuCl/Cl^-$ electrode. The concept is advanced that in these solutions E is determined by the concentration of Cu ions not bound in the complex, while the composition of the complexes depends upon the concentration of the Cl ion. When solutions are ≤ 0.01 N, E is determined by the product of the solubility of the chlorides formed and the Cu oxychlorides.

1. Metal chlorides--Properties   2. Copper--Oxidation   3. Electrodes--Applications

L. U.

Card 2/2

AUTHORS: Purin', B. A. , Lepin', L. K.

TITLE: On the Electrochemical and Corrosion Behavior of Iron in Aqueous
             Electrolyte Solutions. III. Electrode Potential and Rate of Corrosion
             of Iron in Acid Electrolyte Solutions (K voprosu ob elektrokhimi-
             cheskom i korrozionnom povedenii zheleza v vodnykh rastvorakh
             elektrolitov. III. Elektrodnyy potentsial i skorost' korrozii zheleza
             v kislykh rastvorakh elektrolitov)

PERIODICAL: Izv. AN LatvSSR, 1957, Nr 12, pp 141-150

ABSTRACT: The variation in the electrode potential E and in the rate of corro-
             sion (C) of Fe in solutions containing various amounts of HCl, $HCl +$
             $NaCl$, $H_2SO_4 + K_2SO_4$, and $CaCl_2 + HCl$ were investigated. It is
             shown that in these solutions Fe C which proceeds without the forma-
             tion of insoluble products follows the general established laws: In
             the initial period E is displaced in the positive sense, then a stationary
             value is established. The rate of C in the initial period decreases
             sharply, then increases. A transition form exists between the forms of
Card 1/2   C in neutral and acid solutions, which is determined by the variation

SOV/137-58-11-23049

On the Electrochemical and Corrosion Behavior of Iron (cont.)

in the pH in the process of C and by the formation of insoluble products. For a
preceding report see RZhMet 1957, Nr 8, abstract 15266.

V. G.

Card 2/2

L. F. P. I. N. L.

LATVIA/Physical Chemistry - Crystals.

B.

Abs Jour : Ref Zhur - Khimiya, No 12, 1958, 38745

Author   : Groskaufmanis, a., Lepin', L.

Inst   : Latv. University.

Title   : Optical Properties of Some Basic Aluminum Chlorides that were Prepared by Dissolving Aluminum Metal in a Concentrated Aqueous Solution of Aluminum Chloride.

Orig Pub : Uch. zap. Lat. un-t, 1957, 15, 275-284

Abstract : It was found that as a result of exposure to ultraviolet light, hydrogen chloride is evolved from the crystal hydrate of aluminum chloride. Probably the following reaction takes place,
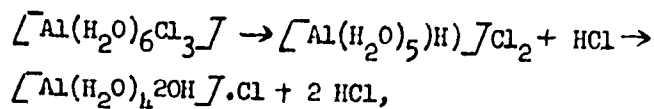
Card 1/2

LATVIA/Physical Chemistry - Crystals.
B.

Abs Jour : Ref Zjur - Khimiya, No 12, 1958, 38745

$$[Al(H_2O)_6Cl_3] \rightarrow [Al(H_2O)_5)H)]Cl_2 + HCl \rightarrow$$
$$[Al(H_2O)_4 2OH].Cl + 2 HCl,$$

as a result of which, the nature of the aluminum bond is changed.

Card 2/2

LEPUTA, L.

GENERAL
PERIODICALS: VESTIS No. 1, 1958

LEPUTA, L. Determination of nitrofuran solubility in water by the help of
polarography. In Russian. p. 113

Monthly list of East European Accessions (EEAI) LC, VOL. 8, No. 2,
February 1959, Unclass.

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 170 (USSR)

SOV/137-58-11-23024

AUTHORS: Vayvade, A. Ya., Lokenbakh, A. K., Lepin', L. K.

TITLE: Apparatus for Investigating Corrosion in Aqueous Solutions of Salts at Elevated Temperatures (Ustanovka dlya issledovaniya korrozii v vodnykh rastvorakh soley pri povyshennykh temperaturakh)

PERIODICAL: Izv. AN LatvSSR, 1958, Nr 2, pp 111-114

ABSTRACT: Existing apparatus accomplished the regulation of temperature with a ± 1°C precision but did not ensure natural access of O_2. The authors propose to use a thermostat consisting of a cylinder with an outer container of steel bronze and an inner one of Cu. Between them is a layer of asbestos fiber 50 mm thick. A double water-cooled lid acts as a cooling element and prevents evaporation of the heat carrier (water). Heating is achieved by a 4.5-kw tubular electric heater; the temperature is regulated by a magnetic contact thermometer and an electromagnetic relay with a ± 0.15°C precision in the 20-95° range; the heat carrier is stirred with a centrifugal pump. Graduates serving as corrosion-testing devices are inserted into openings in the lid of the thermostat. To prevent evaporation of the solution a finger-shaped

Card 1/2

Apparatus for Investigating Corrosion in Aqueous Solutions of Salts (cont.)   SOV/137-58-11-23024

water-cooled cooling element is used which rests on the graduate by means of four pins. This ensures a free access of O_2. The specimen is suspended by a glass hook from the end of the finger-shaped cooling element. The area of the specimen is 7 cm^2, the volume of the solution is 50 ml . The thermostat has 260 points

A. A.

Card 2/2

LIEPINA, L.

GENERAL

PERIODICALS: VESTIS,   No. 5, 1958

LIEPINA, L. Kinetic regularity of iron oxidation in water and in water solutions of neutral salts (KCI) in different temperatures. In Russian. p. 107

Monthly list of East European Accessions (EEAI) LC, Vol. 8, no. 2,
February 1959, Unclass.

LIYEPINA, L.

Electrochemical and corrosion behavior of iron in aqueous solutions of electrolytes. IV. Iron electrode potentials and corrosion. B. Purin and L. Liepina. Latvijas PSR Zinatņu Akad. Vēstis 1958, No. 9, 105-11; cf. C.A. 52, 19600h.—The change of electrode potential and rate of corrosion of iron in NaOH, NaOH + NaCl, and K_2CO_3 solns. was investigated. The behavior of iron is detd. by potential-time and rate of corrosion-time curves. The reaction of iron with caustic soln. is characterized by the curve of moving potential in the pos. direction for some time, until the stationary point is reached (0.025-0.150 v.). The iron electrode is in a passive stage. The anode process in this case is strongly depressed. Corrosion of iron in dild. caustic soln. (pH ≤ 11.3 and 10.8-13.3) with significant addn. of Cl ion (NaOH + NaCl) characterized the curve, with the potential moving in the neg. direction. The stationary point of the electrode potential is 0.300-0.350 v. The corrosion process has a strongly local character.

G. Melnyk

Distr: 4E2c

L. ? , (K

75-1-30/32

AUTHORS: Stradyn', Ya. P. ,   Lepin', L. K.

TITLE: On the Polarographic Wave of Aluminum (O polyarograficheskoy volne alyuminiya)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 1, pp.196-200 (USSR)

ABSTRACT: In a letter to the editor's office the attempt is made to dicuss the data about the polarographic peculiarities of aluminum. The discrepancies in the data on the potentials of the aluminum half wave according to different authors are shown: -1,70 V (reference 7), -1,63 V (reference 4), -1,76 V (reference 9), and it is attempted to illustrate these. It is shown that the depolarizing effect of Al^{3+}-ions is connected with the separation of hydrogen, but not with a reduction to the pure metal. In this case it must be considered that the aluminum wave is lagging behind the hydrogen wave of the strong acids, as well in the water medium, as in the ammonia medium, and that the amplitude at constant pH is rigorously proportional to the aluminum ion-concentration in the solution. Furthermore, it is shown that in the presence of Al^{3+} in an acid medium two hydrogen-reduction-waves occur: a more positive, and a more negative one. It is shown that the occurrence of the aluminum wave may be brought into connection with the reduction of the

Card 1/2

74-1-30/32

On the Polarographic Wave of Aluminum

water molecule of the hydrate cover. There are 3 figures, and 17
references, 3 of which are Slavic.

ASSOCIATION: Latvian State University, Riga
(Latviyskiy gosudarstvennyy universitet, Riga)

SUBMITTED: November 9, 1956

AVAILABLE: Library of Congress

Card 2/2

LYEPINA, L.

/ Hydrosol of Iron. A. Tetere and L. Liepina. *Latvijas* 3 *PSR Zinatnu Akad. Vestis* 1950, No. 2, 73(in Russian).— By the Svedberg method a hydrosol of Fe was obtained. The expt. was made in H_2 atm. under intensive cooling condition. The sol-suspension contained 2–12 μ particles. The content of metallic Fe was 180.0 to 680.0 mg./l. and total Fe 517.0–1280.0 mg./l.   M. K. Chang —

MATSEYEVSKIY, B.; LIEPINA, L.

Automatic gasometric titration of water suspensions of ferric hydroxide
with oxygen. Vestis Latv ak no.12:79-82 '59.   (EEAI 9:11)
        (Water)   (Iron hydroxides)   (Oxygen)

AUTHORS: Lepin', L. K., Vaivade, A. Ya., Ozhis, Z. F.   SOV/76-33-2-19/45

TITLE: Oxidation Kinetics of Iron in Aqueous Solutions of the Salt Mixtures $[KCl(K_2SO_4)+K_3PO_4(K_2HPO_4,K_2CO_3)]$ (Kinetika okisleniya zheleza v rastvorakh smesey soley $[KCl(K_2SO_4)+K_3PO_4(K_2HPO_4,K_2CO_3)]$)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 357 - 366 (USSR)

ABSTRACT: On the basis of observations in previous papers (Refs 1-6) it can be assumed that the prevention of iron corrosion in neutral salt solutions of alkali metals (chlorides, sulfates) occurs through an electrophoretic blocking of the cathodic segments of the metal surface by the positively charged γ-FeO(OH) particles. This assumption is corroborated by the determinations of the electrode potential of iron (Refs 6,7). The iron oxidation in carbonate and phosphate solutions of the alkali metals is nevertheless hindered by negatively charged α-Fe(OH) particles and this can finally lead to a passivation of the metal surface (Refs 2-6). For this reason it seemed interesting to carry out investigations

Card 1/3

Oxidation Kinetics of Iron in Aqueous Solutions of the   SOV/76-33-2-13/45
Salt Mixtures [KCl(K_2SO_4)+K_3PO_4(K_2HPO_4,K_2CO_3)]

with mixtures of the above mentioned salts. A few important
papers concerning this matter are given, among which are
those by I.Shtern, Ts. Gul'yanskaya and K.Nekrasov (Ref 11),
M. A. Rozenberg and Ye. I. Pogorel'skiy (Ref 13), I. L.
Rozenfel'd (Ref 14), and others (Refs 8-10, 12), and it
is found that the prevention of corrosion must depend upon
the proportional amount of the salt components. For this
reason the kinetics and the character of the iron corrosion
were investigated for solutions of KCl, K_2SO_4, K_2HPO_4,

K_3PO_4 and K_2CO_3, and binary solutions of these salts at
20°C. For these studies steel 10(C - 0.13%, Si-0.28%,
Mn-0.55%, P - 0.036%, S - 0.042%, the rest Fe) was used. It
was observed that an increase in the phosphate or carbonate
concentration (Figs 3-5) with a constant concentration of
KCl or K_2SO_4 (under 1.0 n) accelerates the corrosion at

the beginning, then this effect passes through a maximum
and fades with a ratio of the inhibitor to the salt of
5(10) : 1 to exhibit a passivating effect. At concentrations

Card 2/3

Oxidation Kinetics of Iron in Aqueous Solutions of the   SOV/76-33-2-19/45
Salt Mixtures $[KCl(K_2SO_4)+K_3PO_4(K_2HPO_4,K_2CO_3)]$

of KCl $>$ 1.0 n no maximum appears and the corrosion is not
completely inhibited. It is assumed that with small salt
concentrations an inhibition of the corrosion occurs accord-
ing to the above assumption, by γ-FeO(OH) particles,
while at higher concentrations of the inhibitor negative
particles block the anodic segments. The observed maximum
on the corrosion-concentration curves is explained in terms
of an over-charging of the particles, which block the metal
surface. There are 6 figures, 3 tables, and 17 references,
12 of which are Soviet.

ASSOCIATION: Akademiya nauk Latv. SSR, Institut khimii (Academy of
                Sciences Latv. SSR, Institute for Chemistry)

SUBMITTED: July 10, 1957

Card 3/3

5 (4)

AUTHORS: Lepin', L. K., Kadek, V. M.   SOV/76-33-7-17/40

TITLE: The Dependence of the Oxidation Rate and Electrode Potential
              of Copper on the pH of the Solutions

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1560 - 1565
              (USSR)

ABSTRACT: As the composition of copper oxidation products depends on the
              composition of the electrolyte and electrodes of second order
              are formed by insoluble deposits on the copper surface, the
              oxidation rate and the copper potential consequently depend
              also on the concentration of electrolyte anions. The authors
              closely investigated the dependence of the electrode potential
              (EP) and corrosion rate of copper on the pH of the medium,
              using NaCl- and Na_2SO_4 solutions (0.01 n) with hydrochloric
              acid, sulphuric acid or sodium hydroxide as well as pure acid
              or lye. The measuring method applied hereto was described in
              (Ref 8). In calculating theoretical potential values some as-
              sumptions were made. The resultant diagrams potential - pH_0

Card 1/3   (pH_0 = initial pH-value) and rate of copper oxidation - pH_0

The Dependence of the Oxidation Rate and Electrode   SOV/76-33-7-17/40
Potential of Copper on the pH of the Solutions

may be divided into three parts: (1) at $pH_o < 2(3)$; (2) from $pH_o = 3$ to $pH_o = 11(12)$; and (3) at $pH_o > 12$ (the second part may be subdivided into two parts). In the first part, the (EP) and oxidation rate (OR) of copper vary with the pH_o and depends on the acid anion. In the second part, the pH is stabilized and attains a constant value ($pH_s = 6.4 - 7.2$) during copper oxidation, the (EP) and (OR) not depending on the pH_c or the electrolyte composition, but only on this pH_s-value. In the third section (strongly alkaline solutions), the (EP) is distinctly shifted toward negative values, while the (OR) attains a maximum and drops again to zero. The authors found that the kind of deposits on the copper surface exercises great influence upon the (EP) and (OR) during oxidation. At small pH-values the (EP) and (OR) are also affected by the concentration of copper ions accumulated in the solution during oxidation. There are 3 figures and 10 references, 8 of which are

Card 2/3   Soviet.

The Dependence of the Oxidation Rate and Electrode   SOV/76-33-7-17/40
Potential of Copper on the pH of the Solutions

ASSOCIATION: Akademiya nauk LatvSSR,Institut khimii (Academy of Sciences
               of the Latvian SSR, Institute of Chemistry)

SUBMITTED: January 6, 1958

Card 3/3

Distr: 4E2c/4E3d

Kinetics of oxidation of aqueous suspension of hydrated iron oxide with oxygen in dynamic conditions. B. Macejevskis and L. Liepina.—*Latvijas PSR Zindtnu Akad. Vestis* 1960, No. 1, 89-95.—The gasometric method was used. The effect of mixing temp., original concn. of FeO, excess of alkali and also oxidized suspension and Fe_2O_3 on the velocity were investigated. The velocity of oxidn. increases sharply with the rate of mixing, increases slightly with temp., in the initial stages is independent of FeO, and decreases with increase in excess of alkali. Addn. of oxidized suspension and Fe_2O_3 does not influence the velocity. No ferro-ferrites are formed during the oxidn. The process of oxidn. is controlled by diffusion but the character of the latter changes with time. Increase in the excess of alkali decreases the velocity of oxidn. more than that due to the decrease in soly. of oxygen.   A. Liberkyj

Lepin, L. K.

(6)

AUTHORS: Tananayev, I. V., Lushnaya, N. P.

TITLE: The XVII Congress on Pure and Applied Chemistry

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 5, pp. 1178 - 1185

TEXT: The XVII Congress of the IUPAC (International Union of Pure and Applied
Chemistry) took place in Munich from July 30 to September 6, 1959. It was pre-
ceded by the IX Conference of the IUPAC (August 26-29, 1959) which was attended
by a Soviet delegation consisting of B. A. Kazanskiy (re-elected as representative
of the USSR at the Bureau of the IUPAC), M. M. Shemyakin (elected as a member of
the Section of Organic Chemistry), A. P. Vinogradov (elected as Deputy Chairman
of the Section of Geochemistry), I. V. Tananayev (elected as a member of the
Section of Inorganic Chemistry), Ya. I. Gerasimov, O. A. Reutov, and
G. I. Rakhmaninov. Further, I. P. Alimarin was appointed Second Secretary of the
Section of Analytical Chemistry. About 2200 delegates attended the Congress. In
a plenary session O. A. Reutov delivered a lecture: "The Mechanism of the Form-
ation of Metal-Carbon Bond and Some Considerations on the Reactivity of Organo-
metallic Compounds of Heavy Metals". Concerning the work of the sections the

Card 1/2

following is reported: Section I (Organometallic Compounds), 66 lectures. A re-
port on the work of this section will be given later on. Section II (Chemistry of
Hydrides), 36 lectures. Section III (Chemistry of Actinides and Lanthanides),
51 lectures, among them D. I. Ryabchikov: "Complex Formation of Rare Earths",
and I. V. Tananayev: "On the Composition of Ferrous Cyanides of the Rare Earths,
Scandium and Yttrium". Section IV (Fluorine Chemistry), 21 lectures. Section V
(Preparation of Pure Metals), 16 lectures. Section VI (Non-aqueous Solvents),
16 lectures. Section VII (Homogeneous and Heterogeneous Gas Equilibria),
9 lectures. Section VIII (Semiconductors and Non-metallic Compounds),
24 lectures. Section IX (Ternary Oxides and Sulfides), 35 lectures, among them
N. P. Lushnaya: "The Phase Diagram of the Ternary System CaO - P_2O_5 - SiO_2".
Section X (Various Communications), 101 lectures, among them Yu. K. Delimarskiy
(Kiyev): "Polarography of Molted Salts", L. K. Lepin' (Riga): "On the Kinetics
of Exchange Reactions Between Metals and ... and Ya. I. Gerasimov: "Thermo-
dynamic Properties of Iron- and Cobalt Antimonides". Reactions at ultrahigh
pressures were dealt with at a symposium. I. B. Krichevskiy reported on:
"Thermodynamics of Systems at High and Superhigh Pressures".

Card 2/2

MATSEYEVSKIY, B.; LEPIN',L. [Liepina, L.]

Oxidation kinetics of water suspensions of ferrous hydroxide with
oxygen under dynamic conditions. Vestis Latv ak no.1:89-95 '60.

(EEAI 9:11)

(Oxygen)   (Water)   (Iron hydroxides)

LOKENBAKH,A.[Lokenbaha,A.](Riga); LEPIN',L.[Liepina,L.](Riga)

Effect of temperature on iron oxidation in the solutions of
mohosubstituted potassium phosphate. In Russian. Vestis Latv ak
no.3:107-112 '60.   (EEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.
    (Potassium phosphate)   (Iron)

MYAGKOV,N.(Riga); LEPIN',L.[Liepina,L.](Riga)

Effect of pigment concentration on the protective properties of
lacquer and paint coatings. I.Effect of concentration of pigment
on protective properties of varnish. In Russian. (To be continued)
Vestis Latv ak no.4:109-116 '60.   (EEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.
     (Pigments)   (Varnish and varnishing)

VAYVADE,A.[Vaivade,A.](Riga); LEPIN',L.[Liepina,L.](Riga)

Effect of temperature on the speed of aluminum oxidation in water and water solutions of neutral salts. I.Corrosion of aluminum in potassium chloride solutions under static conditions. In Russian.(To be continued) Vestis Latv ak no.5:89-96 '60.   (EEAI 10:7)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.
     (Aluminum)   (Solutions)   (Water)   (Salts)
     (Corrosion and anticorrosives)   (Potassium chloride)

L. K.

VAYVADE, A.[Vaivade, A.](Riga); LEPIN', L.[Liepina, L.](Riga)

Effect of temperature on the speed of aluminum oxidation in water
and water solutions of neutral salts. II. Corrosion of aluminum in
potassium sulfate solutions under static conditions. Vestis Latv
ak no.6:81-84 '60.

(EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

(Aluminum)   (Potassium sulfate)   (Water)
(Salts)   (Corrosion and anticorrosives)

MATSEYEVSKIY, B.(Riga); LEPIN', L.[Liepina, L.](Riga)

Oxidation kinetics of suspended ferrous hydroxide by oxygen in ferrous (FEII) sulfate water solutions. Vestis Latv ak no.6:85-88 '60.   (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

(Iron sulfates)   (Oxygen)   (Water)   (Iron hydroxide)

LEPIN', L. [Liepina, L.]

Concerning the hydride mechanism of the reaction metal + water.
Vestis Latv ak no.8:79-88 '60.   (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

   (Hydrides)   (Water)   (Metals)

MATSEYEVSKIY, B.; VLASOVA, A.; LEPIN', L.[Liepina, L.]

Kinetics of oxidation of iron (FeII) salts in aqueous solutions by oxidation under dynamic conditions. 3.Oxidation of ferrous chloride. Vestis Latv ak no.12:85-90 '60.   (EEAI 10:9)

(Iron chlorides)   (Solutions)   (Water)

MYAGKOV, N. (Riga); LEPIN', L. [LIEPINA, L.] (Riga)

Effect of pigment concentration on the protective properties of lacquer and paint coatings. II. Effect of pigment concentration on the protective properties of divinylacetylene and coat-tar lacs. Vestis Latv ak no.8:89-94 '60.   (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

(Pigments)   (Protective coatings)   (Lacquer and lacquering)
(Hexadienyne)   (Coal tar)   (Paint)

MATSYEVSKIY, B.; LEPIN', L. [Liepina, L.]

Kinetics of oxidation of iron(FEII) salts in aqueous solutions by oxygen under dynamic conditions. II. Effect of temperature on oxidation kinetics of ferrous sulfate. Vestis Latv ak no.10:91-94 '60.
(EEAI 10:9:10)

(Iron)   (Water)   (Oxygen)   (Iron sulfates)

LOKENBAKH A. [Lokenbaha, A.]; LEPIN', L.[Liepina, L.]

Regularities in the kinetics of the oxidation of iron in monopotassium phosphate solutions. Vestis Latv ak no.9:75-79 '61.

1. Akademiya nauk Latviyskoy SSR, Institut khimii.

MATSEYEVSKIY, B.; LEPIN, L.[Liepina, L.]

Kinetics of oxidation of iron(FeII) salts in aqueous solutions by oxygen under dynamic conditions. Vestis Latv ak no.9:109-116 '60.
(EEAI 10:9)

(Iron)   (Water)   (Oxygen)   (Solutions)

MATSEYEVSKIY, B.; VLASOVA, A.; LEPIN, L.[Liepina, L.)

Kinetics of the ferrous salts oxygen. II. Reactions in aqueous
solutions under dynamic conditions. IV. Reaction rate order in
oxygen. Vestis Latv ak no.2:123-126 '61.

(EEAI 10:9)

(Iron)   (Oxygen)   (Water)   (Solutions)

25607

S/197/61/000/006/007/007
B104/B201

18.8310   4016

AUTHORS: Myagkov, N., Lepin', L.

TITLE: Protective action and ohmic resistance of coatings

PERIODICAL: Akademiya nauk Latviyskoy SSR, Izvestiya, no. 6(167),
1961, 77 - 84

TEXT: The authors had studied before the protective action of lacquer
films as a function of concentration and character of the dyes added to
the lacquer (Izv. AN Latv. SSR, 1960, no. 4, p 109, and no. 8, p 89).
The current densities determined in these experiments depend not only
on the penetrability of the lacquer films, but also on polarization
effects. The effect of the dye concentration therefore proves to be
insufficient. It was the aim of the present investigation to determine
the effect of the dye concentration upon the change of the ohmic
resistance of lacquer films, in which connection the influence of
polarization effects is avoided by the use of alternating current. The
ohmic resistance of lacquer films was measured with an ordinary Wheatstone
bridge. Drying-oil lacquer, ethinol lacquer, and coal-tar lacquer were

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S/197/61/000/006/007/007
B104/B201

used as lacquer bases, to which minium, iron oxide, zinc oxide, and
titanium dioxide up to 10 % were added as dyes. The experimental
arrangement is shown in Fig. 1. Disk-shaped electrodes of 0.5-mm thick
tin were used. The electrode diameter was 60 mm. The electrodes
featured a band containing a copper wire. The band was fitted in a
glass tube. The two electrodes were fastened in a plate at a distance
of 30 mm from each other, and were immersed to 50 mm into a 3 %
potassium chloride solution. The ohmic resistance of this system was
measured, and with the resulting data the ohmic resistance of 100 cm^2 of
the lacquer film (50 μ thick) was calculated. It is noted from the
results presented in diagrams that there is a definite relationship
between protective properties and ohmic resistance of the films. The
best protective action to salt solutions is displayed by ethinol lacquer,
followed by coal-tar lacquer, and, finally, oil varnish. In the same
succession also ohmic resistance drops. There are optimum dye
concentrations. The ohmic resistance is a function of the penetrability
of the film, which in its turn is a function of porosity and swelling
power. The electrical conductivity of films in salt solutions is thus
caused by ions. The initial drop of the ohmic resistance is brought

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about by a penetration of salt solution into the film. Ions cannot penetrate until after the microcapillaries are filled with water. A further reduction of the ohmic resistance is caused by the decay of the film. P. Ts. Vasserman, Ya. M. Kolotyrkin, V. V. Chebotarevskiy and A. A. Feoktistov are mentioned. There are 10 figures and 13 references: 6 Soviet-bloc and 7 non-Soviet-bloc. The most important references to English-language publications read as follows: J. E. Mayne, Research, 5, 278 (1952); R. Ch. Bacon et al., Industrial and Engineering Chemistry, 40, 141 (1938); F. Wormwell et al., Journal of Iron and Steel Institute, 164, 141 (1950).

ASSOCIATION: Institut khimii AN Latv. SSR
(Institute of Chemistry AS Latviyskaya SSR)

SUBMITTED: March 1, 1961

Card 3/4

LEPIN', L.

Reaction of elements with water. Vestis Latv ak no.6:161-164 '61.

(Chemical reactions)   (Water)

LEPIN', L.K. [Liepina, L.K.], akademik

Corrosion of metals in salt solutions. Vest. AN SSSR 33
no.11:71-74 N '63.   (MIRA 17:1)

1. AN Latviyskoy SSR i Institut khimii AN Latviyskoy SSR.

S/020/63/148/001/030/052
B107/B186

AUTHORS: Lepin', L. Member AS LatSSR, Lokenbakh, A.

TITLE: The role of the primary protective layer during the oxida-
             tion process of metals in aqueous solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 1, 1963, 148-151

TEXT: The kinetics of the surface oxidation of iron (steel) in water
containing air and in aqueous KCl solution is investigated at temperatures
of from 0 to 90°C and at time intervals up to 180 min. The reaction was
traced by means of colorimetric, volumetric and, later, also gravimetric
determination of the oxidized metal. Evaluation of g-t diagrams (g - loss
in weight, t - time) showed that the reaction in solutions of < 2.0 N KCl

proceeds, during the first 60 min, according to the law $g^2 = kt$, and at

higher concentrations according to the law $g^3 = kt$. The rate constant k
rises with the temperature. The oxidation rate passes through a minimum
after about 20-30 min. Explanation: One part (S_2) of the metal surface
is covered by an initial protective layer. At the beginning, oxidation
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The role of the primary ...

takes place only at the free surface (S_1); then, the protective layer is dissolved. . The total amount of oxidized metal is then given by $g \neq g_1 + g_2 = k_1 S_1 t^{1/n} + k_2 S(t) t^{1/n}$. k_1 and k_2 are kinetic constants, related to the unit of surface. The function $S(t)$ is given by the reaction between electrolyte and initial protective layer. When the protective layer is totally dissolved, $S(t)$ must be of hyperbolic shape, e.g. $S = S_2 \dfrac{t-t'}{a \pm (t-t')}$. a is the rate constant of the chemisorption process, t' is the time during which the protective layer is not affected. This formula was brought into the linear form:

$$\frac{(t-t')^{1+1/n}}{g-g_1} = \frac{1}{k_2 S_2 a} + \frac{1}{k_2 S_2} (t-t').$$ Its validity was graphically demonstrated for the oxidation of iron in aqueous solution at 20 and 40°C. The protective layer was found to dissolve in a period of 1/4 - 2 hr at temperatures below 50°C and under the conditions mentioned. Complete decomposition occurs in 6 - 8 hrs at 0°C and in 2 - 3 hrs at higher

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S/020/63/148/001/030/032
B107/B186

temperatures. The difference in results is caused by insufficiently uniform surface treatment. There are 3 figures.

ASSOCIATION: Institut khimii Akademii nauk LatvSSR (Institute of Chemistry of the Academy of Sciences LatSSR)

SUBMITTED: July 12, 1962

Card 3/3

ACCESSION NR: AP4030782

S/0020/64/155/004/0839/0842

AUTHOR: Lepin', L. (Academician); Kadek, V.

TITLE: Conditions for the rupture of the primary film formed by the oxidation of aluminum in neutral solutions.

SOURCE: AN SSSR. Doklady*, v. 155, no. 4, 1964, 839-842

TOPIC TAGS: aluminum, aluminum oxidation, aluminum oxide film, electrode potential, aluminum oxidation kinetics, oxide coating rupture, electrochemical behavior, oxidation rate, aluminum oxychloride film, hydrated aluminum oxychloride film, dehydrated aluminum oxychloride film

ABSTRACT: The oxidation of aluminum in neutral solutions was investigated to establish a relationship between the oxidation kinetics (L. K. Lepin', A. Ya. Vayvade, Izv. AN LatvSSR, ser. khim. no. 3, 297, 1963) and the change of the electrode potential with time, depending on the temperature and the concentration of the solution. The potentials of degreased and pickled aluminum electrodes were measured in 0.001-4 N KCl solutions for periods up to 30 days. After preliminary variations essentially constant potential values were established which were

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ACCESSION NR: AP4030782

related to the chloride concentration by the logarithmic relationship:

$$\varepsilon = \varepsilon_0 + k \lg C_{KCl}$$

where ε_0 = 500 millivolts (20C) and 520 millivolts (30C) and k is about 60-70 millivolts. This indicates the aluminum electrode in the initial phases (see left portion of figures 1 and 2 of enclosure) functions as a complex electrode with an indestructible film partially transformed at its surface into complex hydrated or dehydrated oxychlorides:

$$(Al_2O_3)_n (Al(OH)_3)_m \cdot Al_x (OH)_{3x-1} Cl$$

$$(Al_2O_3)_n \cdot Al_xO_xCl_x.$$
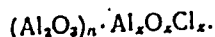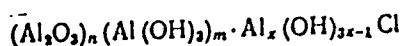
Further observation of the aluminum electrodes shows differences in the behavior in solutions of different concentration at different temperatures (see right portion of figures 1 and 2 of enclosure), showing rupture of the primary oxide film with intense hydrogen evolution and formation of α -Al(OH)$_3$ and boehmitic γ -AlO(OH) in changing ratios leading to a decrease of the electrode solubility with time. Comparison of the kinetics and the electrochemical behavior shows

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ACCESSION NR: AP4030782

oxidation rate is not synonymous with the electrochemical behavior of the metal
under the conditions investigated. It is assumed this is due to the mixed
mechanisms of aluminum oxidation (because of the oxygen and water) and the
development of conditions for diffusion through the thickness of the deposit.
Orig. art. has: 3 figures and 1 equation.

ASSOCIATION: Institut khimii, Akademii nauk LatvSSR (Institute of Chemistry,
Academy of Sciences, Latv SSR)

SUBMITTED: 25Dec63   DATE ACQ: 30Apr64   ENCL: 02

SUB CODE: MM,GC   NO REF SOV: 005   OTHER: 001

Card 3/5

L 01262-67   EWT(m)/FWP(t)/ETI   IJP(c)   JD/WB
SOURCE CODE: UR/0197/65/000/009/0073/0032

ACC NR: AP6004488

AUTHOR: Lepin', L. --Liepina, L.

ORG: Institute of Chemistry, AN LatvSSR (Institut khimii AN LatvSSR)

TITLE: Results of some work in the field of metal chemistry and metal corrosion

SOURCE: AN LatSSR. Izvestiya, no. 9, 1965, 73-82

TOPIC TAGS: metal, inorganic chemistry, corrosion, electrochemistry, corrosion protection, metal oxidation, metal chemical analysis

ABSTRACT: A brief review (33 references) is given of the literature on the results of studies of the oxidation and corrosion of metals and their protection against corrosion in water and aqueous solutions of salts. By a composite use of various physicochemical methods of investigation it is possible to reveal all the main parameters of these complex processes: the specific features of their kinetics, the relationship of kinetic characteristics to the composition and properties of oxidation products (both primary and of the higher orders), the relationship of electrochemical characteristics to the surface of the phase boundary, the conditions of the appearance of protective films capable of causing partial or entire elimination of oxidation, and the dependence of the protective action of applied coatings on their colloidal-chemical and electrokinetic behavior. The use of colloidal metals (in the form of sols and suspensions) in the study of the oxidation mechanism in aqueous solutions resulted in far-reaching

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L 01262-67

ACC NR: AP6004483

0

conclusions on the mechanism of the main reaction: metals + water. A brief outline is presented of the possible development of methods of investigating metal oxidation. Most of the work is of a rather practical nature. There are a few references on the kinetic and analytic aspects of the mechanism of protection of metals from oxidation in the entire region of temperatures up to the critical temperature of the solvent (water). Further studies of the oxidation mechanism should be carried out in the oposite direction, i.e., in the region of low temperatures and low pressures. The deciphering of the physical meaning of kinetic equations is important in the field of the theory of the kinetics of oxidation in neutral media.

SUB CODE: 11/ SUBM DATE: 16Jun65/ ORIG REF: 031/ OTH REF: 002

awm

Card 2/2

BEDNYAKOV, V.M.; LEPIN, M.F.; CHIKALENKO, G.A.

Improved techniques of 10G25D (MK) steel production. Metallurg
5 no.2:13-16 F '60. (MIRA 13:5)

1. Zhdanovskiy zavod tyazhelogo mashinostroyeniya.
        (Steel--Metallurgy)

LEPIN, T.K.

"Agroecological survey of principal field crops" by N.I. Vavilov.
Reviewed by T.K. Lepin. Izv. AN SSSR. Ser. biol. no.5:639-640
S-O '58.   (MIRA 11:10)
        (GEOGRAPHY, ECONOMIC) (VAVILOV, N.I.)

LEPIN, T.K.; PASTUSHENKO-STRELETS, N.A.

Resistance of spring wheat to frit flies. Biul.Glav.bot.sada
no.33:107-109 '59.   (MIRA 12:10)

1. Glavnyy botanicheskiy sad Akademii nauk SSSR.
   (Frit flies) (Wheat--Disease and pest resistance)

VAVILOV, Nikolay Ivanovich, akademik; YAKUBTSINER, M.M., doktor
        sel'khoz. nauk, otv. red. toma; LEPIN, T.K., doktor
        sel'khoz.nauk, otv. red. toma; YAKOVLEVA, V.M., red.izd-
        va; BOCHEVER, V.T., tekhn. red.

        [World resources of cereal, pulse crop, and flax varieties
        and their use in breeding] Mirovye resursy sortov khlebnykh
        zlakov, zernovykh bobovykh, l'na i ikh ispol'zovanie v se-
        lektsii. Moskva, Izd-vo "Nauka." Vol.2. [Wheat] Pshenitsa.
        1964. 122 p.   (MIRA 17:4)

KUTOVSKIY, Mikhail Yakovlevich, inzh.; LIVSHITS, Vladimir
        Yakovlevich, inzh.; LEPIN, V.N., red.; TELYASHOV, R.Kh.,
        red.izd-va; BELOGUROVA, I.A., tekhn. red.

[Recovery of organic solvents in dyeing with nitrocellulose
enamel dyes] Rekuperatsiia organicheskikh rastvoritelei pri
okraske nitroemaliami, stenogramma lektsii. Leningrad, 1962.
35 p.   (MIRA 16:11)
        (Dyes and dyeing--Leather)   (Solvents)

BIBIKOV, A.N.; LEPIN, V.P.

New type of rolling mill working stands. Metallurg 9 no.5:35
My '64.   (MIRA 17:8)

1. Elektrostal'skiy zavod tyazhelogo mashinostroyeniya.

PUKHAL'SKIY, G.V., kand.tekhn.nauk; LEPIN, Yu.E., inzh.; ZAZHARSKIY, I.K.,
inzh.

Cascade method of producing slag pumice. Stroi. mat. 7 no.4:13-14
Ap '61.   (MIRA 14:5)
          (Slag)   (Dnepropetrovsk—Aggregates (Building materials))

LEPINA, E.I., and Phys-Math Sci--(dis.) "...
de p-unitar... space." Riga, 1952. (Latvian State Uni. I. Stuchk.
Phys-Math Faculty), 150 copies (KL,25-55,157)

— 16 —

LEPINA, L.; OSE, Z.

Colloidal-chemical effects at surfaces of metals and inhibition of corrosion in salt solutions. II. Composition and structure of the corrosion products of aluminum in potassium chloride solutions.
Latvijas PSR Zinatnu Akad. Vestis '50, No.6, 35-46.   (MLRA 4:3)
(CA 48 no.2:517 '54)

FEL'DMAN, E.A., kand.med.nauk; LEPINA L.I. (Riga)

New combination of physical therapy methods (ultrahigh-frequency
and ionogalvanization). Vrach.delo no.9:971 S'58   (MIRA 11:10)

1. Nevrologicheskoye otdeleniye Dorozhoy bol'nitsy Latviyskoy
zheleznoy dorogi.
        (ELECTROTHERAPEUTICS)

FEL'DMAN, E.A., kand.med.nauk; LEPINA, L.I.

Differential diagnosis of periarteritis nodosa. Vrach.delo no.11:
71-75 N '60.   (MIRA 13:11)

1. Dorozhnaya bol'nitsa goroda Rigi.
        (ARTERIES--DISEASES)

USSR/Biology   LEPINA, T·K·   FD 305

Card 1/1

Author   : Lepina, T. K., Doctor of Biological Sciences

Title   : Bibliography of foreign literature (1952-1953). I. General Microbiology.
               a) General works, morphology, biology, and classification

Periodical   : Mikrobiologiya, 23, 365-387, May/Jun 1954

Abstract   : This section consists of a listing alphabetically, by author's names, of
               foreign published material on the subjects given above in the title. There
               are 639 items in the bibliography. Each item includes the name of the au-
               thor, the title of the work, and an appropriate source identification, i.e.
               volume, issue, pages, and source for periodical articles, and publisher,
               location, and date for books.

Institution : The Library of the Department of Biological Sciences of the Academy of
               Sciences, USSR

Submitted   : --

LEPINIS, A.K. [Lepins, A.]

Distribution of [...] in the soils of the Lithuanian S.S.R. Zool. zhur. 43 no.6:927-929 '64.   (MIRA 17:12)

1. Institute of Zoology and Parasitology, Academy of Sciences of the Lithuanian S.S.R., Vilnius.

KATS, V.I., doktor ekon. nauk; KIRICHENKO, V.N., kand. ekon. nauk;
IVANOV, Ye.A.; SAID-GALIYEV, K.G.; LUK'YANOV, E.B.; MUSATOVA,
V.A.; PLYSHEVSKIY, B.P., kand. ekon. nauk; STOMAKHIN, V.I.;
KARPUKHIN, D.N., kand. ekon. nauk; KIRICHENKO, N.Ya.;
ZHIDKOVA, M.V., kand. ekon. nauk; ANCHISHKIN, A.I.; KLINSKIY,
A.I., kand. ekon. nauk; SOLOV'YEV, N.S.; KLOTSVOG, F.N.;
VSYAKIKH, E.P.; LAGUTIN, N.S., kand.ekon. nauk; LEMESHEV, M.Ya.,
kand. sel'khoz.nauk; KORMNOV, Yu.F., kand. ekon. nauk; SAVIN,
V.A.; TEREKHOV, V.F.; KUDROV, V.M., kand. ekon. nauk; AL'TER,
L.B., doktor ekon. nauk, red.; KRYLOV, P.N., kand. ekon. nauk;
LEPINKOVA, Ye., red.; KOKOSHKINA, I., mladshiy red.; ULANOVA,L.,
tekhn. red.

[Growth of the social product and the proportions of the
national economy of the U.S.S.R.]Rost obshchestvennogo pro-
izvodstva i proportsii narodnogo khoziaistva SSSR. Moskva,
1962. 453 p.   (MIRA 16:2)
          (Russia—Economic policy)

Lepinskikh, B.M.

/410   TT-516

THE FORMS OF SILICA IN LIQUID SLAG. (O formakh kremnezema v zhidkikh shlakakh). O. A. Esin, L. K. Gavrilov, and B. M. Lepinskikh. Translated by O. Belkov from Doklady Akad. Nauk S.S.S.R., 88, 713-16 (1953). 6p.

The application of the emf method to the investigation of liquid alloys has made it possible to prove experimentally the existence of the stable complexes FeSi and Fe$_2$P at 470°C. It is therefore expedient to use this method to find complex anions, for example Si$_x$O$_y^{-}$, in molten slags. (auth)

Lepinskikh, B.M.

7745   TT-676
THE STATE OF ALUMINA IN MOLTEN SLAG. (O sostoianii glinozema v rasplavlennykh shlakakh). O. A. Esin and B. M. Lepinskikh. Translated by G. Belkov from Doklady Akad. Nauk S.S.S.R., 91, 1151-60(1953). 8p.

In considering the form of silica in liquid slags, alumina occurrence in the form of the anion (AlO_2^-) is assumed. However, the phase diagram indicates, in addition to $CaO \cdot Al_2O_3$, a series of congruently melting compounds; $5CaO \cdot 3Al_2O_3$, $2CaO \cdot Al_2O_3 \cdot SiO_2$ and $CaO \cdot Al_2O_3 \cdot 2SiO_2$. Their anions can also occur in a melt. (auth)

LEBEDKIN, B. M.

"Investigating the Properties of Liquid Slags by the Method of Electromotive Forces." Cand Tech Sci, Ural Polytechnic Inst, Sverdlovsk, 1954. (RZhKhim, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)
SO: Sum. No. 598, 29 Jul 55

LEPINSKIKH, B. M.

USSR/Engineering - Metallurgy

Card 1/1   : Pub. 41 - 7/17

Author   : Yesin, O. A., and Lepinskikh, B. M.

Title   : A study of the properties of molten slag components by the method of
                electromotive forces

Periodical   : Izv. AN SSSR, Otd. tekh. nauk, 2, 60-66, Feb 1954

Abstract   : On the basis of electrochemical study of molten slags calculates the
                activities of (CaO MgO), Al_2O_3, and SiO_2 and variations of isobaric
                potential of slag component on dilution. Establishes a possibility
                of using a method of electromotive forces for controlling composition
                of molten slag in metallurgical furnaces. Tables. Three references,
                one from US publication.

Institution :

Submitted   : By Academ I. P. Bardin, January 27, 1954

USSR.

The determination of the ferrous oxide activity in fused slags by the e.m.f. method. O. A. Laun, B. M. Lepinskikh, and V. I. Musikin (Ural Filial Acad. Sci. U.S.S.R., Sverdlovsk). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1954, No. 12, 120-7.—E.m.f. forces were measured at 1420-70° with an Fe and a MgO electrode in electrolytes composed of CaO-MgO-SiO₂-FeO-Fe₂O₃ of varying compn. The FeO activity and the variations of cationic potentials with dilu. were calcd. from the e.m.f. A comparison of the values found with the data found in literature shows a satisfactory agreement, which confirms the previously found energetic nonequivalence of the slag ions and the micro-nonuniformity of the melts. The cell for the measurement of the e.m.f. and the method for its use are described.
W. M. Sternberg

YESIN, O.A.; LEPINSKIKH, B.M.

Effect of cations on the stability of anions in fused slags.
Dokl.AN SSSR 95 no.1:135-138 Mr '54.   (MLRA 7:3)

1. Institut khimii i metallurgii Ural'skogo filiala Akademii nauk
SSSR.   (Ions) (Slag)

LEPINSKIKH, B.M.

GERM.

The form of alumina in fused slags. O. A. Esin and B. M. Lepinskikh. *Silikattech. 6, 11(1955).*—Since CaO, 2CaO.Al₂O₃.SiO₂, and CaO.Al₂O₃.SiO₂ melt congruently, the existence of complex aluminate and aluminosilicate anions is presumed. The problem is examd. by studying the galvanic cells of the type Fe, Al, C/CaO, MgO, Al₂O₃, SiO₂ (concn. I)/C/CaO, MgO, Al₂O₃, SiO₂ (concn. II)/Fe, Al, C. The e.m.f. of such cells is detd. by the ratio of the activities (a) of Al₂O₃: e.m.f. = (RT/6F)ln(a'_{Al₂O₃}/a''_{Al₂O₃}). The expts. were made at the const. temp. of 1460° in a graphite crucible. The e.m.f. plotted vs. the concn. of Al₂O₃ shows two discontinuities which correspond to the transitions of complex anions derived from 5CaO.2Al₂O₃ and 2CaO.Al₂O₃.SiO₂. A peculiar third discontinuity is explained as an indication of the amphoteric character of Al₂O₃. Curves of const. e.m.f. are plotted in the system CaO-Al₂O₃-SiO₂ which shows distinctly a field in which Al forms the cation Al³⁺ (if the melts are high in Al₂O₃ and SiO₂), and another field (for melts high in CaO) in which Al enters the complex anions. Also in *Doklady Akad. Nauk S.S.S.R.* 91, 1187-90(1953).   W. Eitel

LEPINSKIKH, B.M.

3872

ELECTROCONDUCTIVITY OF TITANIUM SLAGS. B. M. Lepinskikh, O. A. Esin, and S. V. Shavrin (Inst. of Metallurgy, Ural Acad. of Science). Zhur. Priklad. Khim. 29, 1813-21(1956) Dec. (In Russian)

Measurements were made of the specific electro-conductivity of Na_2O-TiO_2, $FeO-TiO_2$, and $MnO-TiO_2$ with various content of TiO_2 at temperatures up to $1470°C$. (R.V.J.)

LEPINSKIKH,, B.M., YESIN, O.A.

"Studies on Electric Conductivity of Systems: FeO-Fe$_2$O$_3$-P$_2$O$_5$ and FeO-Fe$_2$O$_3$-CaO-P$_2$O$_5$,"
lecture given at the Fourth Conference on Steelmaking, A.A. Baikov Institute of Metallurgy, Moscow, July 1-6, 1957

137-1958-2-2347

Lepinskiy, B.M.

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 20 (USSR)

AUTHORS: Yesin, O.A., Lepinskiy, B.M.

TITLE: Investigation of the Properties of a Molten Slag by Means of an Electromotive-Force Method (Issledovaniye svoystv zhidkogo shlaka metodom elektrodvizhushchikh sil)

PERIODICAL: V sb.: Fiz.-khim osnovy proiz-va stali. Moscow, AN SSSR, 1957, pp 438-445. Diskus pp 505-512

ABSTRACT: At 1300-1500° measurements were made of the e.m.f. of galvanic cells composed of the molten slags $CaO-MgO-Al_2O_3-SiO_2$, Na_2O-SiO_2, $FeO-SiO_2$ or $FeO-TiO_2$ with an oxygen-electrode of solid MgO or C. From the nature of the e.m.f.-composition curves it was possible to confirm the existence in the molten slags of the anions SiO_4^{4-}, $(SiO_3^{2-})_n$, $(Si_2O_5^{2-})_m$, $Al_3O_7^{5-}$, $Al_2SiO_7^{4-}$, TiO_4^{4-}, and $(TiO_3^{2-})_n$. An attempt was made to use the e.m.f. method to keep track of the composition of the molten slag.

B.L.

Card 1/1   1. Slags--Molten--Properties. Analysis

LEPINSKIKH, B. M.

32-6-40/54

AUTHOR   YESIN, O.A., LEPINSKIKH, B.M.
TITLE   Crucibles made of Molten Magnesite for Research Work at High
Temperatures.
(Tigli iz plavlenoy magnezii dlya issledovaniy pri vysokikh tm-
peraturakh -Russian)

PERIODICAL   Zavodskaya Laboratoriya, 1957 , Vol 23, Nr 6, pp 752-753 (U.S.S.R.)

ABSTRACT   Electrically molten magnesite can be used for the manufacture of
melting crucibles to be used for research work carried out at high
temperatures (1200-1600°) because of its fire-and slag resistance.
It can also be used as oxygen electrode for measuring work. Magne-
site smelt is obtained in electric arc furnaces. The block taken
out of the furnace has three zones: an inner zone which has a spon-
ge-like structure because of the gases separated during smelting
and cannot be used for the purpose mentioned; there follows a se-
cond, ring-like, zone of fine crystalline magnesium oxide; it is of
grey color and contains 2,5 % SiO; 1,2% Al_2O_3; 1,2% Fe_2O_3; 3,2% CaO
and 92% MgO; the exterior crust-like zone is unusable and consists
of not fully smelted magnesite. Molten magnesite is highly resi-
stant against iron slag. Its solubility in the latter is approxi-
mately expressed by the equation by Shilov-Nernst:
$$\frac{dC}{dt} = \frac{D}{\delta} S(C_\infty - C) = a - bc,$$ where $\frac{dC}{dt}$ - denotes the velocity of the sol-
ving process, D -coefficient of diffusion, δ- diffusion layer, S-

P
Si
Al   Card 1/2
Ca

MUSICHIN, V. I., ESIN, O. A. and LEPINSKIKH, B. M.,
Sverdlovsk Polytechnic Institute

Influence of the Vacuum Pig-Iron Treatment on the Activity of Dissolved Silicon."

paper presented at Second Symposium on the Application of Vacuum Metallurgy.

Moscow, 1-6 July, 1955

L E P I N S K I K H B. M.

18(0); 5(2)

PHASE I BOOK EXPLOITATION   SOV/3100

Akademiya nauk SSSR. Ural'skiy filial. Institut metallurgii

Trudy, Vyp. 4 (Transactions of the Institute of Metallurgy, Ural Branch,
Academy of Sciences, USSR; No. 4) Sverdlovsk, 1958. 157 p. Errata
slip inserted. 1,000 copies printed.

Editorial Board: N.A. Vatolin (Resp. Ed.), Candidate of Technical Sciences;
A.S. Mikulinskiy, Professor, Doctor; V.Ya. Miller, Professor; P.A. Pazdnikov,
Candidate of Technical Sciences; and S.S. Lisnyak, Candidate of Technical
Sciences; Ed.: M.S. Baranovskaya.

PURPOSE: This book is intended for ferrous and nonferrous metallurgists.

COVERAGE: The book presents results of investigations of theoretical pro-
blems in metallurgy and chemistry and gives information on the efficient
use of raw materials in ferrous and nonferrous metallurgy and on the de-
velopment of new production processes in the metallurgical and chemical
industries. The articles were written by junior members and experienced
specialists of the scientific staff of the Institutes of Metallurgy,
Chemistry, and Electrochemistry, Ural Branch, Academy of Sciences, USSR.

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No personalities are mentioned. References follow each article.

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Chernobrovkin, V.P., A.A. Dobryden', and V.S. Belyayev. Phosphorus and Ti-
tanium in Foundry Pig Iron   113

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L E P I N S K I K H,   B. M.

AUTHORS: Yesin, O.A., and Lepinskikh, B. M. (Sverdlovsk). 24-1-22/26

TITLE: Electro-chemistry of phosphorous slags. (K elektrokhimii fosforistykh shlakov).

PERIODICAL: Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk, 1958, No.1, pp. 135-139(USSR).

ABSTRACT: The electric conductivity is investigated of iron-phosphorous slags, the electrolysis and also the cathode and anode polarisations.   The specific electric conductivity was studied of Fe-P slags containing 19.5 and 28.8% P_2O_5 in the temperature range 780 to 1250°C. It was established that an increase in the Fe_2O_3 content leads to an increase of the electric conductivity and to a decrease of the activation energy of the studied alloys. It was found that substitution of FeO by CaO reduces the conductivity and increases the activation energy. The possibility of electrolysis is experimentally confirmed for a system with electrodes consisting of liquid alloys of iron with phosphorus.. The slag containing $FeO-Fe_2O_3-P_2O_5$ being the electrolyte.   The experiments are described as well as the results.   The dependence of the electric conductivity on the temperature for the system $FeO-Fe_2O_3-P_2O_5$ are graphed in Fig.2.

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Electro-chemistry of phosphorous slags.   24-1-22/26

The isotherms of electric conductivity and the activation energy for the slags $FeO-Fe_2O_3-P_2O_5$ are graphed in Fig.3. The isotherms of the electric conductivity in the system $FeO-Fe_2O_3-P_2O_5$ for a constant content of Fe_2O_3 are graphed in Fig.4. Fig.5 contains the isotherms of the electric conductivity in the system $FeO-Fe_2O_3-CaO-P_2O_5$, whilst the cathodic and the anodic branches of the polarisation curves for $FeO-Fe_2O_3-P_2O_5$ slags are graphed in Fig.6. The compositions of the individual slags are entered in Tables 1 and 2. The current efficiency of P and Fe,for various current densities,at 1250°C are entered in Table 3 and for various other temperatures in Table 4. The results are discussed, particularly the influence of calcium additions. There are 6 figures, 4 tables and 9 references - 6 Russian, 3 English.

SUBMITTED: November 1, 1956.

AVAILABLE: Library of Congress.

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MUSIKHIN, V.I.; YESIN, O.A.; LEPINSKIKH, B.M.

Determining silicon activity in liquid cast iron with variable
composition and pressure of the gaseous phase. Trudy Inst. met.
UFAN SSSR no.4:5-7 '58.   (MIRA 12:10)
        (Gases in metals) (Activity coefficients)

LEPINSKIKH, B.M.; YESIN, O.A.; MUSIKHIN, V.I.

Silicon activity in liquid cast iron and the effect of manganese
and phosphorus on it. Trudy Inst. met. UFAN SSSR no.4:9-13   '58.
(MIRA 12:10)

(Cast iron--Metallurgy) (Activity coefficients)

SHAVRIN, S.V.; SAPOZHNIKOVA, T.V. ; LEPINSKIKH, B.M.

Electric resistance and phase constitution of briquetted ilmenite
in the process of reduction roasting. Trudy Inst. met. UFAN SSSR
no.4:15-18 '58.   (MIRA 12:10)
        (Ilmenite) (Phase rule and equilibrium)
        (Ore dressing)

TETERIN, G.A.; YESIN, O.A.; LEPINSKIKH, B.M.

Physicochemical properties of molten cobalt silicates. Trudy
Inst. met. UFAN SSSR no.4:145-156 '58.   (MIRA 12:10)
                    (Cobalt silicate)

MUSIKHIN, V.I.; YESIN, O.A.; LEPINSKIKH, B.M.

Influence of Mn, P and Si on the activity of aluminum in liquid cast iron. Zhur. prikl. khim. v. 31 no.5:689-693 My '58. (MIRA 11:6)

1. Institut metallurgii Ural'skogo filiala AN SSSR.
(Iron-aluminum alloys)

SOV/76-32-8-24/37

AUTHORS: Lepinskikh, B. M., Yesin, O. A., Musikhin, V. I.

TITLE: The Anisotropy of the Electroconductivity in a Sodium Silicate Current (Anizotropiya elektroprovodnosti v struye silikata natriya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 8, pp. 1874-1877 (USSR)

ABSTRACT: The present investigations are intended to solve the problem whether in a flow of silicate an orientation of the anions takes place having a different resistance along and across the direction of flow. The experiments were carried out by means of melts of the system Na_2O-SiO_2 in an apparatus the diagram and the description of which are given. The flow rate was not always the same, it never surpassed, however, a Reynol'd number of 20, with the transition from an accelerated flow to a normal flow taking place according to Gagen-Puazeyl in the initial section of 1 cm length. The representation of the electric scheme as well as a description of the operation method are given. The results obtained show a clear anisotropy of the

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The Anisotropy of the Electroconductivity in a Sodium Silicate Current

electroconductivity, with a decrease of the resistance being observed in the direction along the flow, and an increase of it in the cross direction. This is explained by a complex structure of the silicon oxide anion, and it is assumed that an orientation of chain— or lamella-type silicon oxide anions in the direction of flow is present. It was found that the observations made agree with those by Bockris and Lowe (Bockris and Lowe)(Ref 12), and that they contradict those by Baak (Bok) (Ref 13). In the explanations of the results obtained, referring to the periodicity of the above anisotropy by the change of the composition of the silicate the authors give data obtained by N. V. Belov (Ref 15). There are 1 figure and 15 references, 6 of which are Soviet.

ASSOCIATION: Ural'skiy filial Akademii nauk SSSR, Institut metallurgii Sverdlovsk (Ural Branch of the AS USSR, Institute of Metallurgy, Sverdlovsk)

SUBMITTED :   March 25, 1957

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LEPINSKIKH, B.M.; YESIN, O.A.; MUSIKHIN, B.I.; VATOLIN, N.A.

Zlektrokhimicheskoe legirovanie stali vanadiem.

report submitted for the 5th Physical Chemical Conference on Steel Production.

MOSCOW _   30 JUN 1959

Pinsk...k-A, B. M.

PHASE I BOOK EXPLOITATION   SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotempera-
turnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody vysokikh tem-
peratur; trudy soveshchaniya (Experimental Techniques and
Methods of Investigation at High Temperature; Transactions of the
Conference on Experimental Techniques and Methods of Investigation
at High Temperature) Moscow, AN SSSR, 1959. 769 p. (Series:
Akademiya nauk SSSR. Institut metallurgii. Komisiya po fiziko-
khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of
Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical
engineers.

COVERAGE: This collection of scientific papers is divided into six
parts: 1) thermodynamic activity and kinetics of high-temperature
processes 2) constitution diagram studies 3) physical properties
of liquid metals and slags 4) new analytical methods and pro-
duction of pure metals 5) pyrometry, and 6) general questions.
For more specific coverage, see Table of Contents.

Karolikov, A.M. Surface Tension and Fluidity of Aluminum-
and Zinc-Base Alloys 269
No direct relationship between surface tension and
fluidity of the alloys investigated was observed.

Yeremenko, V.N.; Yu.N. Ivashchenko, and V.I. Nizhenko,
Measurement of Surface Tension of Metals and Alloys by the
Sessile-Drop Method 285
The surface tension of tin at temperatures of 251-882° C
was determined by the sessile-drop method and the maximum-
bubble-pressure method. The former method was shown to be
accurate to within ± 1.5 percent and capable of further
refinement with improved equipment and methods of calcula-
tion.

Lepinskikh, B.M., and O.A. Yesin. Measurement of the
Electrical Conductivity of Titaniferous Slags 295
Measurements were made of the electrical conductivity of
the systems Na₂O-TiO₂, FeO-TiO₂, and MnO-TiO₂ of various
compositions and at various temperatures using a Wheatstone
bridge and a weak alternating current. The conductivity of
these systems falls with an increase in TiO₂ content, as in
the case of silicate systems. Results indicated that con-
ductivity is higher in the MnO-TiO₂ system than in the
FeO-TiO₂ system, that in both of these systems it is higher
than in the MnO-SiO₂ system, and that in the
Na₂O-TiO₂ system it is lower than in the Na₂O-SiO₂ system.

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SOV/180-59-4-8/48

18. 9100

AUTHORS: Yesin, O.A.; Lepinskikh, B.M. and Musikhin, V.I.
            (Sverdlovsk)

TITLE: Study of the Thermodynamic Properties[2] of the Lead Oxide-
            Vanadium Pentoxide, Lead Oxide-Silica and Lead Oxide-
            Vanadium Pentoxide-Silica Systems by the Method of
            Electromotive Force

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
            nauk, Metallurgiya i toplivo, 1959, Nr 4, p 47-51 (USSR)

ABSTRACT: Measurements of the emf E of a cell were used for
            determining the standard changes of potential $\Delta Z^\bullet$, of
            entropy $\Delta S^\bullet$ and of enthalpy $\Delta H^\bullet$. By introducing a
            second oxide in the electrolyte, the activity of the
            components and the deviation of the thermodynamic functions
            from ideal values can be calculated. The slag systems
            used were $PbO - SiO_2$, $PbO - V_2O_5$ and $Pb - SiO_2 - V_2O_5$
            and the compositions are given in Table 1. Fig 1 shows
            the apparatus used, consisting of a resistance heater (1),
            a crucible (2), liquid lead (3), oxide mixture (4) and
            electrodes of platinum (5) and platinum-oxygen (7). The
            results for E for the $PbO-SiO_2$ system and the activity
            of PbO are given in Table 2. Fig 2 compares the results

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Study of the Thermodynamic Properties of the Lead Oxide-Vanadium
Pentoxide, Lead Oxide-Silica and Lead Oxide-Vanadium Pentoxide-Silica
Systems by the Method of Electromotive Force

for the activity of PbO with the previous results by other
workers. The present results are similar to those of
Richardson and Webb (Ref 7). The negative deviations from
ideal solution indicate the formation of Pb-O-Si, the
stability of which increases with decreasing temperature.
The thermodynamic functions for the PbO-SiO$_2$ system are
given in Table 3 and Fig 3. The results confirm the
formation of Pb-O-Si, with a decrease in potential and
entropy and evolution of heat. The results of studies of
the PbO-V$_2$O$_5$ system are given in Fig 2. This system shows
greater negative deviations from the ideal state. The
thermodynamic functions are given in Table 3 and Fig 3.
These confirm the formation of Pb-O-V. Results for the
system PbO-SiO$_2$-V$_2$O$_5$ are given in Table 4. Negative
deviations are again observed. Results confirm that the
bond in Pb-O-V is stronger than that in Pb-O-Si. The
thermodynamic characteristics of PbO in the ternary system
are given in Table 5. There are 3 figures, 5 tables and
9 references, 5 of which are Soviet and 4 English.

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SOV/180-59-4-6/48

Study of the Thermodynamic Properties of the Lead Oxide-Vanadium
Pentoxide, Lead Oxide-Silica and Lead Oxide-Vanadium Pentoxide-Silica
Systems by the Method of Electromotive Force

ASSOCIATION:Institut metallurgii UFAN (Metallurgical Institute UFAN)

SUBMITTED: February 20, 1959

Card 3/3

AUTHORS: Lepinskikh, B.M., Yesin, O.A.

TITLE: On the Possibility of Carbon Control in the Grey Iron Process by the Method of Electro-Motive Forces (O vozmozhnosti kontrolya uglereda v konverternom protsesse ... toden elektrodvizhushchikh sil)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 2, pp 313-317 (USSR)

ABSTRACT: A galvanic element $\underline{\big[}$Ref. 6$\underline{\big]}$ Fe, C | CaC, Al_2O_3, CaC_2 | Fe, C may be used for the control of carbon in the converter process. In Figure 3 the charges of the ... (upper curves) and of the carbon content (lower curves) are given. In the initial stage of the process there are considerable differences between the data. In the later stages the values determined by the emf method and those obtained by ... ... are more congruent. The experiments were ... ... small induction furnace of 1.5 kg capacity and ... ... of ... capacity. In the second case there were considerable deviations, especially in the presence of Si, ..., S, and P admix-

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On the Possibility of Carbon Control in the Converter Process of the method of
Electro-Motive Forces

tures in the iron. The emf method may only be used for the
qualitative determination of carbon.
There are 2 diagrams, 3 graphs, 1 table, and 8 references, 4
of which are Soviet, 2 English, 1 French, and 1 German.

SUBMITTED: October 7, 1957

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SOV/20-126-5-34/69

5(4)
AUTHORS: Musikhin, V. I., Yesin, O. A., Lepinskikh, B. M.

TITLE: Cathodic Polarization During the Deposition of Vanadium From
               Melted Oxides (Katodnaya polyarizatsiya pri osazhdenii
               vanadiya iz rasplavlennykh okislov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 1037-1040
               (USSR)

ABSTRACT: S. A. Sakharuk and G. M. Vaynshteyn (Ref 1) showed the pos-
               sibility of an electrolytic deposition of V from melted calcium
               aluminate, containing V_2O_5, on a liquid iron cathode. The ki-
               netics of this process is investigated. Figure 1 shows the
               polarization curves on the Fe,V-cathode for two Ca-aluminate
               melts (with and without SiO_2) to which different amounts of V_2O_5
               (up to 3%) were added. The critical currents are proportional
               to the V_2O_5-content of the melts. Considering that the diffusion
               coefficients in liquid iron are much higher than in the oxide
               melts ($i'_n \gg i_n$), the following may be derived from the equation
Card 1/3   for the polarization of the concentration: $-\eta \approx \frac{RT}{nF} \ln(1 - \frac{i}{i_n})$ (2).

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Cathodic Polarization During the Deposition of Vanadium From Melted Oxides

The points of the initial sections of the polarization curves are in the coordinate system η, $\lg\left(1-\frac{i'}{i_n}\right)$ actually on a straight

(Fig 1) with an angular coefficient equal to n $\approx$ 5. Consequently the reaction $V^{5+} + 5e = V$ takes place on the cathode (3). The further course of the polarization curve for the melt containing SiO_2 shows that Si is discharged. Thus, under the conditions chosen a separate deposition of V and Si is possible. This was examined on melts with small additions of SiO_2 and V_2O_5 (Fig 2). In the aforementioned coordinate system two straight lines result corresponding to reaction (3) and reaction

$Si^{4+} + 4e = Si$ (4). At an increasing concentration of V_2O_5 (up to 35%) a considerable polarization occurs (Fig 3) which disobeys equation (2). It is explained by an accumulation of the low-valent V^{3+}-ions on the electrode. The deposition of metallic vanadium and the change in charge of vanadium ions is limited by

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Cathodic Polarization During the Deposition of Vanadium From Melted Oxides

the diffusion in the oxide melt. These processes take place at more positive potentials than the deposition of Si. The presence of iron oxides reduces the current yield of V as the cathodic reduction of Fe^{3+} and Fe^{2+} takes place more easily. There are 3 figures and 8 references, 6 of which are Soviet.

ASSOCIATION: Institut metallurgii Ural'skogo filiala Akademii nauk SSSR (Institute of Metallurgy of the Urals Branch of the Academy of Sciences, USSR)

PRESENTED: March 3, 1959, by A. N. Frumkin, Academician

SUBMITTED: March 3, 1959

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